

CLAIMS

1. A perfect bound book comprising a book block having a multiplicity of paper pages, one edge of said book block constituting a spine, a paper cover, said cover having an outer face and an inner face, an outer plastic film lamination laminated to the outer face of said cover and an inner lamination laminated to the inner face of said cover, said inner face of said cover and of said inner lamination having a central portion, an adhesive disposed between said spine and said central portion for binding said book block to the said central portion of said inner face of said cover, said central portion of said inner face of said cover and of said inner lamination being conditioned so that said adhesive binds said spine to said cover.

2. A perfect bound book as set forth in claim 1 wherein said adhesive is a hot melt adhesive.

3. A perfect bound book as set forth in claim 1 wherein said inner lamination is conditioned so that said adhesive effectively binds said book block along said spine to said inner lamination of said cover.

4. A perfect bound book as set forth in claim 1 wherein said wherein said central portion is conditioned by roughening said inner lamination of said cover.

5. A perfect bound book as set forth in claim 1 wherein said inner lamination in the area of said central portion is scarified so as to promote bonding engagement of said adhesive with said inner lamination.

6. A perfect bound book as set forth in claim 5 where in said center portion of said inner lamination is scarified by rolling a roller thereover, said roller having a plurality of points thereon in rolling contact with said inner lamination so as to form a multiplicity of cuts in said inner lamination.

7. A perfect bound book as set forth in claim 6 wherein as said points roll into engagement with and roll out away from said inner lamination, portions of said inner lamination adjacent said cuts extend away from said inner lamination thereby roughening the surface of said inner lamination so as to enhance
5 adherence with said adhesive.

8. A perfect bound book as set forth in claim 7 wherein said points of said roller at least in part penetrate through said inner lamination and into said

paper cover as said roller rolls over said center portion forming said cuts, and wherein as said points roll out away from said paper cover and away from said inner lamination, portions of said paper cover are pulled therefrom and extend
5 into said cuts so as to facilitate adhesive bonding of the adhesive to said paper cover.

9. A perfect bound book as set forth in claim 6 wherein said roller counter-rotates as it engages said inner lamination such that said points form said cuts.

10. A perfect bound book as set forth in claim 6 wherein said central portion extends heightwise of said cover, wherein said roller is moved in heightwise direction relative to said cover along the length of said central portion, and wherein said roller is rotated in the opposite direction of rolling contact with
5 said cover such that said points form said cuts in said inner lamination.

11. A perfect bound book as set forth in claim 10 wherein said roller has a plurality of discs of substantially the same diameter mounted on a common shaft, each of said discs having a plurality of said points thereon.

12. A method of making a perfect bound book having a book block comprising a multiplicity of paper pages, a double laminated cover having a paper cover, an inner lamination and an outer lamination adhered to the inner and outer faces of said paper cover, said book block having one lateral edge thereof referred to as a spine, said method comprising the steps of:
- a. forming said book block;
 - b. laminating a suitable plastic film to the outer face of said cover so as to constitute said outer lamination;
 - c. laminating a suitable plastic film to the inner face of said cover so as to constitute said inner lamination;
 - d. conditioning a central portion of the inner face of said double laminated cover such that said adhesive will effectively bind said spine to said inner lamination;
 - e. applying an adhesive so as to be disposed between said spine and said central portion of the inner face of said double laminated cover upon binding of the book;
 - f. bringing said central portion of said double laminated cover and said spine of said book block into binding engagement with one another with said adhesive therebetween; and

- g. clamping said double laminated cover to said book block proximate said spine so that said adhesive adheres said double laminated cover to said spine of said book block.

13. The method of claim 12 wherein said step of conditioning said central portion of the inner face of said double laminated cover comprises roughening the surface of said inner lamination so that upon bringing said double laminated cover and said book block into binding engagement with said adhesive therebetween, said adhesive will effectively adhesively bind said spine of said book block to the inner lamination of said double laminated cover.

14. The method of claim 13 wherein said step of roughening said center portion of said double laminated cover comprises forming a multiplicity of cuts in said inner lamination.

15. The method of claim 14 wherein said step of forming said cuts in said inner lamination results in at least some of said inner lamination surrounding a respective cut to extend outwardly away from said inner lamination.

16. The method of claim 12 wherein said step of conditioning said central portion comprises scarifying said inner lamination.

17. The method of claim 16 wherein said step of scarifying said inner lamination comprises forming a multiplicity of cuts in said inner lamination.

18. The method of claim 17 wherein said step of forming said cuts in said inner lamination includes cutting through said inner lamination and at least partially into said paper cover.

19. The method of claim 18 wherein said step of forming said cuts is performed by forcibly rolling a roller over the inner lamination in the area of said center portion of said double laminated cover, said roller having a plurality of points on its outer periphery with said points forming cuts in said inner.

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20. The method of claim 18 wherein as said roller is moved with respect to said center portion with said roller points in contact therewith, said roller is counter-rotated in a direction opposite to the direction it rollingly engages the inner lamination.

21. The method of claim 20 wherein said points at least in part pull portions of said inner lamination out of the plane of said inner lamination thereby to roughen the surface of said inner lamination in the region of said center portion
5 of said double laminated cover.

22. The method of claim 21 wherein said points engage said paper cover and as said points roll out of contact with said paper cover at least in part pull portions of said paper cover out of the plane of said paper cover.

23. The method of claim 21 where by forming said cuts through said inner lamination, said adhesive may directly contact said paper cover in the region of said cuts.

24. The method of claim 12 wherein said step of laminating said outer and inner laminations are done simultaneously with one another.

25. A method of printing a book on demand and of perfect binding said book, said book having a book block comprising a plurality of paper text pages, a double laminated cover having an inner face and an outer face and having an
5 outer lamination of plastic film laminated to said outer face of said paper cover and an inner lamination of plastic film laminated to said inner face of said paper cover, said book block having one edge thereof constituting a spine, said method comprising the steps of:

- a. printing on demand said text pages corresponding to said book;
- 10 b. forming said book block from said text pages;

- c. printing on demand said paper cover corresponding to said book being printed on demand;
- d. laminating said outer and inner laminations to the inner and outer faces of said paper cover;
- 15 e. conditioning a portion of the inner face of said double laminated cover in an area to be adhered to said spine of said book block so as to facilitate adhesive binding of said spine of said book block with said double laminated cover;
- 20 f. applying a suitable adhesive so as to be disposed between said spine of said book block and said portion of said laminated cover to be adhered to said spine;
- g. bringing said spine and said conditioned portion of said double laminated cover into adhesive binding relation so that said adhesive adheres directly to said conditioned portion of said cover; and
- 25 h. clamping said double laminated cover to said book block proximate said spine for a time sufficient to effect binding of said book block to said cover so as to form a perfect bound book having a double laminated cover.

26. The method of claim 25 wherein said step of conditioning said portion of said inner cover comprises roughening said portion of said inner lamination of said double laminated cover.

27. The method of claim 26 wherein said step of roughening said conditioned portion of said double laminated cover comprises scarifying said inner lamination.

28. The method of claim 26 wherein said step of roughening said conditioned portion of said double laminated cover comprises forcibly rolling a roller over said inner lamination wherein said roller has a plurality of points thereon which penetrate at least in part into said inner lamination.

29. The method of claim 28 wherein said roller is counter rotated as said roller is forcibly rolled over said cover.

30. The method of claim 29 wherein said points on said roller form a multiplicity of cuts in said inner lamination.

31. The method of claim 30 wherein upon forming said cuts, said points of said roller pull portions of said inner lamination in the region of said cuts out of

the plane of said inner lamination thereby roughening said surface of said inner
5 lamination.

32. The method of claim 31 wherein said points of said roller penetrate
through said inner lamination exposing said paper cover to said adhesive.

33. The method of claim 31 wherein said points of said roller penetrate
at least in part into said paper cover and pull at least portions of said paper cover
out of the plane of said paper cover into said cuts.

34. Apparatus for printing a perfect bound book on demand, said book
comprising a book block having a multiplicity of paper pages, one edge of said
book block constituting a spine, a soft paper cover, said cover having an outer
5 face and an inner face, said cover having an outer lamination adhered thereto
and said inner face of said cover having an inner lamination adhered thereto,
said inner face of said cover having a central portion adhesively bonded to said
spine, said apparatus comprising:

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- a. a text printer for printing on demand the text pages comprising said
book block;
 - b. a cover printer for printing on demand said cover for said on
demand printed book;

- 15 c. a lamination station for laminating a plastic film to both the outer face and the inner face of said cover thus forming a double laminated cover;
- d. a cover conveyor conveying said cover from said cover printer to said lamination station;
- e. a carriage receiving said book block after said text pages have been printed by said text printer;
- 20 f. said carriage transporting said book block along a work path from a receiving station in which said carriage receives said book block to an adhesive application station in which an adhesive is applied to said spine of said book block;
- 25 g. said carriage transporting said book block from said adhesive application station to a binding station;
- h. said cover conveyor transporting said double laminated cover from said lamination station to a cover conditioning station;;
- 30 i. said cover conditioning station conditioning a portion of the inner face of said double laminated cover so as to facilitate the adhesive binding of said double laminated cover to said spine of said book block;
- j. said laminated cover conveyor transporting said double laminated cover to said binding stations such that said conditioned portion of

35 said double laminated cover is substantially in register with said spine; and

40 k. said binding station having a binding clamp engageable with the outer face of said double laminated cover proximate said spine so as to forcibly clamp said double laminated cover to said book block with said spine being substantially in register with said conditioned portion whereby said adhesive binds said double laminated cover to said spine.

35. Apparatus as set forth in claim 34 wherein said conditioning station comprises a roller movable transversely with respect to the direction of transport of said cover, said roller having a plurality of points thereon scarifying inner lamination of said conditioned portion as said roller rolls thereover.

36. Apparatus as set forth in claim 35 wherein said roller has a plurality of points thereon which at least in part penetrate into said inner lamination.

37. Apparatus as set forth in claim 36 wherein said roller is counter rotated as said roller engages said conditioned portion thereby to form a plurality of slits or cuts in said inner lamination.

38. Apparatus as set forth in claim 37 wherein said conditioning station comprises a holder for rotatably mounting said roller, said holder being movable transversely across said cover, a friction wheel carried by said holder rollingly engageable with said cover as said holder is moved transversely across said
5 cover, said friction wheel driving a gear in mesh with a pinion affixed to said roller for counter-rotating said roller as said holder is moved with respect to said cover.